Title: Integration of Contaminated Site and Regulated Release Databases using Geographic Information Systems (GIS).

Key words: Geographic Information Systems, regulated releases, databases, environmental hazards, contaminated sites.

Background: New Jersey, the most densely populated state, has over 14,000 contaminated sites and over 130,000 regulated facilities.

Objective: Demonstration of the capability of GIS to geospatially represent patterns of environmental hazards at different geographic scales by integrating multiple environmental databases. Understanding geospatial patterns in environmental hazard data is an important first step toward linking these data to health outcome data.

Method: The project will use the New Jersey Environmental Management System (NJEMS), other environmental hazard databases and GIS to assess geospatial variation of environmental hazards. NJDEP has an enormous wealth of data, including concentrations of chemicals measured in multiple media, which will be used in this project. NJDEP's hazard inventory is unique because data elements are digitally available on a statewide scale. Statewide variation, such as that needed for ecological studies on potential links between disease and exposure, will be assessed. Variation will be assessed at different geographic scales including municipality, census tract, and distance from regulated sites. An example of detailed site level data, needed for data quality assurance and for conducting more detailed epidemiological studies, will also be presented.

Results: It is anticipated that the results of the geospatial analysis will assist in identifying areas where more investigation is warranted. This project will also provide estimates of uncertainty and variability in the data and allow the NJDEP to assess limitations of the method.

Conclusion: This project will demonstrate the ability of NJDEP to integrate multiple databases using GIS to provide geospatial variation of environmental hazards.

Evaluation: We anticipate that this project will characterize the strengths and weaknesses of this type of analysis.

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